

## What Is Claimed Is:

1. Apparatus for the continuous bonding and/or welding of material webs (14, 16) by means of ultrasound having an ultrasonic horn configured as a rotating roller (22), an anvil disposed opposite the rotating shaft (22), an amplitude transformer (24) set axially on the rotating shaft (22), and an ultrasonic converter (24) attached to the amplitude transformer (24) with an energy supply, characterized in that the length (l) of the rotating roller (22) equals a lambda-half wave of the imposed oscillation or a multiple thereof ( $l = x \cdot \lambda/2$ ).
2. Apparatus in accordance with claim 1, wherein radial bearings (26) are furnished between the amplitude transformer (24) and the rotating roller (22).
3. Apparatus in accordance with one of the preceding claims, wherein an amplitude transformer (24) and an ultrasonic converter (28) are furnished on both sides of the rotating roller (22).
4. Apparatus in accordance with one of the preceding claims, wherein the anvil is a rotating counter-roller (34).
5. Apparatus in accordance with one of the preceding claims, wherein the outer surface of the rotating roller (22) and/or the counter-roller (34) is smooth or patterned.
6. Apparatus in accordance with one of the claims 1 through 4, wherein the anvil is fixed and is specifically a knife, blade or similar.
7. Apparatus in accordance with claim 6, wherein the knife, blade or similar extends in a tangential direction respective to the rotating roller (22).

8. Apparatus in accordance with one of the preceding claims, wherein the depth of the working gap (18) between the rotating roller (22) and the anvil can be adjusted.

9. Apparatus in accordance with one of the preceding claims, wherein the pressure exerted by the rotating roller (22) on the material web (14, 16) can be adjusted.

10. Apparatus in accordance with one of the preceding claims, wherein the rotating roller (22) is formed by a hollow shaft (42) with trunnions (44).

11. Apparatus in accordance with one of the preceding claims, wherein the rotating roller (22) can be cooled or heated.

12. Apparatus in accordance with one of the preceding claims, wherein the counter-roller (34) is configured as an active roller with an amplitude transformer (24) and an ultrasonic converter (28) attached thereto.

13. Apparatus in accordance with one of the preceding claims, wherein at least two rotating rollers (22), which are arranged in tandem, contact the anvil.

14. Apparatus in accordance with claim 13, wherein the two rollers (22) arranged in tandem are offset to each other in the axial direction by an amount ( $\Delta 1$ ).

15. Apparatus in accordance with claim 14, wherein the amount ( $\Delta 1$ ) equals a lambda-half wave of the imposed oscillation ( $\Delta 1 = \lambda/4$ ).

16. Apparatus in accordance with one of the preceding claims, wherein the diameter (D) of the rotating roller (22) is partially waisted.

17. Apparatus in accordance with claim 16, wherein the depth of the waist equals one part of a lambda-half wave of the imposed oscillation ( $E = |x| \cdot \lambda/2$ ).

18. Apparatus in accordance with one of the preceding claims, wherein the diameter of the rotating roller (22) is made thicker such that pressure is equally distributed along its length.

19. Apparatus in accordance with one of the preceding claims, wherein the rotating roller (2) has a swelling.

20. Apparatus in accordance with one of the preceding claims, wherein the change in diameter of the rotating roller (22) corresponds to the bending line.

21. Apparatus in accordance with one of the preceding claims, wherein the axis of the rotating roller (22) and the counter-roller anvil are skewed relative to each other.